

TO: Joyce M. Grossnickle, Administrative Officer

FROM: Austin Abraham, Director, Management Services

DATE: September 2, 2010

Subject: Adoption of the Comprehensive Energy Plan

Presenter (Name & Title): Jessica Stoner, Project Manager, Management Services

Requested Date: September 16, 2010

Phone: x16779

Type of Briefing: (Click box to select)



Administrative Business



Worksession



Closed Session



BOCC/BOE Mtg.



County/Municipal Mtg.



Public Hearing

Board Action Desired:



Decision



Guidance



Information



PowerPoint Presentation

Staff Coordination: This topic has been thoroughly coordinated with the following Division/Department Directors, and they will have representatives at the presentation: (click to place a check mark in the appropriate box).

	Staff	Initials	Date	Comments
	County Attorney			
✓	County Manager	JAN	9/10/10	
✓	Finance Director	DLK	9/1/10	
✓	Budget Officer	AK	9.7.10	✓
	Fire & Rescue Services Dir.			
	Management Services Director			

	Staff	Initials	Date	Comments
	Permitting & Development Review Director			
	Planning Director			
✓	Public Works Director	JM	9/7/10	
✓	Utilities and Solid Waste Management Director			
	Elected Officials			
	Independent Agencies			
✓	Other OES Director	AV	9/9/10	

Attachments:



Yes



No

PLEASE NOTE: The original and 10 copies of all attachments (including the coordination sheet) are required for the Board of County Commissioners' meetings, which includes the Joint BOCC/BOE Meeting and the County/Municipal Meeting.

If you are scheduled for a Closed Session, then you only need to submit the original and nine (9) copies of the back-up material. Back-up materials are due to the Administrative Officer ONE WEEK IN ADVANCE of the meeting. If materials are not received in a timely manner, you will be asked to reschedule your item.

9.7.2010

Date

Recommendation 3.4 states "purchase hybrid transit buses whenever 90 percent federal funding is available"... Typical cost share for Transit Capital items is 80% federal, 10% state, 10% local.

Kelly W. Law
Signature

Date

Signature

Date

Signature

Date

Signature

Date

Signature

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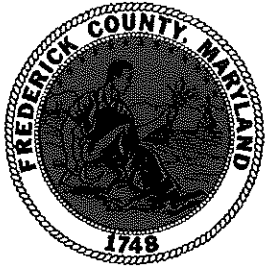
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✓	County Manager			
✓	Finance Director			
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	Management Services Director			

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	Permitting & Development Review Director			
	Planning Director			
✓	Public Works Director			
✓	Utilities and Solid Waste Management Director	WJA	9/9	
	Elected Officials			
	Independent Agencies			
✓	Other OES Director			

Attachments: ☒ Yes ☐ No

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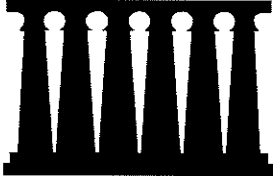
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Ronald A. Hart

MANAGEMENT SERVICES DIVISION

Austin S. Abraham
Division Director

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DATE: September 3, 2010

TO: Board of County Commissioners

THROUGH: Austin Abraham, Director, Management Services Division *Austin A.*

FROM: Jessica Stoner, Project Manager *JS*

SUBJECT: **Adoption of the Comprehensive Energy Plan**

ISSUE: Should the BOCC adopt the final version of the Comprehensive Energy Plan as guidance to County operating divisions.

BACKGROUND: On June 22, 2010 Management Services Division presented a draft version of the Comprehensive Energy Plan, addressing the BOCC's 2007-2011 Strategic Plan objective on energy which states:

By January 2009, adopt a comprehensive energy plan for Frederick County government, which establishes definitive goals (annual) to reduce the county's use of non-renewable energy over a 15-year period in its office buildings, facilities and vehicle fleet by 50% or more.

A summary of the Plan recommendations is provided in Attachment A.

During the presentation in June staff was asked to further evaluate and investigate several topics:

- Cost-benefit of major cost items
- Staffing impacts of a centralized energy management system
- Building specific energy savings for TPO roofs
- Mount Saint Mary's renewable energy projects

This information is presented in Attachment B.

Sustainability Commission: At the request of the BOCC, staff provided the draft Comprehensive Energy Plan to the Sustainability Commission for review and comment. On July 21 staff also made a presentation on the Plan to the Commission. The Commission has submitted formal comments to the BOCC in an August 19th memo from Chairman Don Briggs (see Attachment C). The Commission supports most aspects of the Plan, but does not support the use of "unspecified and unknowable future technologies," or "the purchase of renewable energy credits and/or

Adoption of the Comprehensive Energy Plan
September 2, 2010
Page 2 of 3

the purchase of renewable electricity from a planned waste-to-energy plant.”

The Commission recommends that the Plan “reflect the elements that can be considered cost-effective based on environmental, social and economic returns.”

It is staff’s opinion the recommendations based on future technological advancement are soundly based on innovation and regulatory trends of the past 20 years. Although they cannot be implemented today, there is every reason to believe technology will support significant future conservation and conversion opportunities. Staff continues to support inclusion of recommendations for 100% conversion of electricity to renewable sources. Although there is a lengthy process ahead on the WTE plant, WTE is not the only renewable source for power that is or will be available.

However, staff does agree with the Commission that prioritizing recommendations for implementation is important and an additional narrative has been added to reflect this (see #1 below).

Draft Changes: Based on comments from Division Directors and the Sustainability Commission staff has made minor changes to the draft version of the Plan. Those changes include:

1. To address the Sustainability Commission’s comments on how best to prioritize recommendations a section titled “Prioritization of Implementation” was added to pages 5 and 18.
2. The Figure shown on pages 6 and 31 titled “Non-Renewable Energy Reduction of Building-Related Energy Usage by 2024” was changed to reflect the cumulative effect rather than the individual (straight-line addition) effect of the building recommendations.

By updating the Figure to show the cumulative effect, it also changed the “Buildings Work Group Conclusion” section on pages 6 and 31. The total cumulative reduction of 81% will be achieved through a mix of 50% conservation and 50% conversion.

3. The Figure shown on pages 7 and 63 titled “Non-Renewable Energy Reduction of Fleet-Related Energy Usage by 2024” was changed to reflect the cumulative effect of the main strategies, rather than the previous individual effect of the fleet recommendations.

Due to the cumulative change of the Figure, it also changed the “Fleet Work Group Conclusion” section on pages 8 and 63. The total cumulative reduction of 42% will be achieved through a mix of 55% conservation and 45% conversion.

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September 2, 2010
Page 3 of 3

STAFF RECOMMENDATION: That the Board of County Commissioners adopt the final version of the Comprehensive Energy Plan as guidance to County operating divisions.

FUNDING INFORMATION:

Budget Implication: No ____ Yes X (If yes, provide necessary information below)

The Plan includes both one-time costs and a mix of operating costs and savings. If the plan is adopted as guidance to County operating Divisions, then budget implications would be addressed in the future as items are brought before the BOCC for consideration.

Attachment A: Summary of Recommendations

Attachment B: Follow up to Comments and Questions

Attachment C: Sustainability Commission Memo from Chairman Don Briggs dated August 19, 2010

SUMMARY OF RECOMMENDATIONS

1.0 Organizational Commitment

- **Recommendation 1.1:** Obtain and demonstrate support and commitment from the County Commissioners and all management levels for energy conservation and the energy reduction goal of the County Commissioner's Strategic Plan.
(Lead Agency = Office of Environmental Sustainability)
- **Recommendation 1.2:** Conduct staff education on the importance of energy conservation to the goals of the County government and on techniques for conserving energy in the work place.
(Lead Agency = Office of Environmental Sustainability)
- **Recommendation 1.3:** Adopt written energy conservation expectations for County employees.
(Lead Agency = Office of Environmental Sustainability)
- **Recommendation 1.4:** Provide an annual report on the progress of the Comprehensive Energy Plan recommendations.
(Lead Agency = Management Services Division)

2.0 Buildings

- **Recommendation 2.1:** Adopt an Energy Management Program based on uniform operations, maintenance, and design standards.
(Lead Agency = Management Services Division)
- **Recommendation 2.2:** Conduct energy audits of all major County buildings.
(Lead Agency = Management Services Division)
- **Recommendation 2.3:** Make steady advances in energy conservation and energy efficiency in County buildings by implementing recommendations from building energy audits.
(Lead Agency = Management Services Division)
- **Recommendation 2.4:** Install a centralized Energy Management Control System for County buildings.
(Lead Agency = Management Services Division)
- **Recommendation 2.5:** Continue to use the EPA's ENERGY STAR Portfolio Manager software to analyze energy consumption, costs, and overall performance of County buildings to identify and prioritize energy conservation and efficiency projects.
(Lead Agency = Management Services Division)

Attachment A

- **Recommendation 2.6:** Continue the County's capital program of building renovations that include HVAC upgrades to improve performance and energy efficiency.
(Lead Agency = Management Services Division)
- **Recommendation 2.7:** Adopt high performance energy efficiency standards for new buildings and major renovation projects starting in FY2011.
(Lead Agency = Office of Environmental Sustainability)
- **Recommendation 2.8:** Use on-site renewable energy for County buildings when technically and financially feasible.
(Lead Agency = Management Services Division)
- **Recommendation 2.9:** Purchase either renewable energy certificates or direct purchase electricity generated from renewable sources for 15% of the County's electricity requirements starting in 2013. Purchase additional renewable electricity when the waste-to-energy facility comes online.
(Lead Agency = Management Services Division)
- **Recommendation 2.10:** Implement the "Technology Energy Management Plan" developed by the Interagency Information Technology Division.
(Lead Agency = Interagency Information Technology Division)
- **Recommendation 2.11:** Convert existing traffic lights to light-emitting diode (LED) technology by 2012 and use LED technology in all future installations.
(Lead Agency = Division of Public Works)
- **Recommendation 2.12:** Establish guidelines for County leased space to meet the energy efficiency standards for County-owned buildings.
(Lead Agency = Management Services Division)
- **Recommendation 2.13:** Adopt policies to regulate the number of personal appliances in County buildings and require that new appliances, electronics and office equipment meet or exceed ENERGY STAR certification requirements.
(Lead Agency = Management Services Division)
- **Recommendation 2.14:** Use roofing materials that minimize heat absorption in new construction and roof replacement projects.
(Lead Agency = Management Services Division)
- **Recommendation 2.15:** Use a third party commissioning agent for all new construction and renovation projects to verify energy-related systems (HVAC and electrical) are designed, installed and calibrated to perform as intended and achieve

Attachment A

maximum energy efficiency. Perform retro-commissioning of existing buildings on a systematic basis.

(Lead Agency = Management Services Division)

- **Recommendation 2.16:** Consolidate general government offices into a single high-energy-efficiency building.
(Lead Agency = Management Services Division)
- **Recommendation 2.17:** Utilize future energy-related technology advances as they become available to reduce the County's use of non-renewable energy.
(Lead Agency = Management Services Division)

3.0 Fleet

- **Recommendation 3.1:** Continue active fuel conservation by all Divisions under the 2008 10 Percent Fuel Conservation Plan.
(Lead Agency = Fuel Conservation Committee)
- **Recommendation 3.2:** Convert diesel fuel to a 20 percent bio-diesel blend (B20) in the summer months and a 5 percent bio-diesel blend (B5) in the winter months beginning summer 2011. As diesel engine technology improves and new vehicles are purchased the goal is to operate year round using a 20 percent bio-diesel blend.
(Lead Agency = Management Services Division)
- **Recommendation 3.3:** Purchase hybrid gasoline/electric sedans and light trucks when possible as vehicles are replaced as a conversion to a renewable energy source.
(Lead Agency = Management Services Division)
- **Recommendation 3.4:** Purchase hybrid transit buses whenever 90 percent federal funding is available for such purchases.
(Lead Agency = Transit Division)
- **Recommendation 3.5:** Down-size vehicles to the most fuel-efficient vehicles that can perform the job. Focus purchase decisions on right-sizing vehicles to meet the user's job requirements rather than user preferences.
(Lead Agency = Management Services Division)
- **Recommendation 3.6:** Utilize teleconferencing and webinar capabilities in County facilities to reduce staff travel to meetings.
(Lead Agency = Office of Environmental Sustainability)

Attachment A

- **Recommendation 3.7:** Investigate vehicle and fuel technology advancements annually to determine if they would benefit County operations and the reduction of non-renewable fuel consumption.
(Lead Agency = Management Services Division)

4.0 Utilities and Solid Waste Facilities

- **Recommendation 4.1:** Continue the landfill gas recovery and electricity generation project which can produce up to 2 megawatts of renewable electricity.
(Lead Agency = Division of Utilities and Solid Waste Management)
- **Recommendation 4.2:** Pursue construction of a regional municipal waste-to-energy project that can provide 45 megawatts of renewable electricity beginning in 2015.
(Lead Agency = Division of Utilities and Solid Waste Management)
- **Recommendation 4.3:** Re-evaluate the option for the installation of a photovoltaic solar technology project in five years.
(Lead Agency = Division of Utilities and Solid Waste Management)

Attachment B

Comprehensive Energy Plan **Follow-up to Comments and Questions**

Cost-benefit of major cost items: Commissioner Gardner asked about a cost-benefit analysis on higher cost recommendations. Breakeven analyses are shown below for the four recommendations.

2.3 Make steady advances in energy conservation and energy efficiency in County buildings by implementing recommendations from building energy audits.

The total one-time cost to implement this recommendation over 15 years is \$3,000,000. The total savings over the period is \$1,852,500. However if investment stopped in year 16 there would be a continuation of \$285,000 annual savings. The breakeven point for the recommendation is estimated to be 19 years.

2.4 Install a centralized Energy Management Control System for County buildings.

Over the 15-years this recommendation is implemented it will cost approximately \$1,500,000 with a total savings of \$725,400. Beginning year-16 and after the annual savings will be \$111,600. The breakeven point for this recommendation is 22 years with an expected system life of 15 to 25 years.

2.7 Adopt high performance energy efficiency standards for new buildings and major renovation projects starting in FY2011.

To implement this recommendation the total one-time costs will be \$1,000,000 and the total 15-year savings will be \$247,500, with a \$45,000 annual savings each year after. Implementing this recommendation will have a breakeven point of 32 years with a 25 to 40 year expected life of the improvements.

3.4 Purchase hybrid transit buses whenever 90 percent federal funding is available for such purchases.

The cost of diesel fuel over the life of the hybrid buses will determine the breakeven point related to the County's incremental \$20,000 one-time cost for each bus. If diesel fuel remains around \$2.50 per gallon the breakeven point would be reached in 5 years with a 12 year expected life of the buses.

Evaluating the fuel savings against the \$200,000 incremental one-time cost the breakeven point would be 50 years.

Staffing impact of a centralized energy management system (EMS): County Manager Ron Hart asked about Maintenance staffing impacts of the implementation of a centralized energy management system.

Attachment B

Converting existing buildings to a centralized EMS is not expected to allow a reduction in Maintenance staffing. However, as new buildings come online, the benefits of a centralized EMS may reduce additional staffing requirements.

Even without immediate staffing reductions, the implementation of a centralized energy management system would provide a number of benefits:

- Allows off-site analysis of potential building system problems.
- Eliminates dispatching of technicians on calls where there are no actual problems.
- Provides email notifications to technicians of any system issues, which allows for faster responses
- When building system issues are minor technicians maybe able to remotely execute a temporary override, reducing overtime hours on evenings and weekends.

Building specific energy savings for TPO roofs: Commissioner Gardner also asked if staff could develop building-specific energy savings related to heat-reflecting TPO roof installations. The following analyzes the payback period for the Health Department and the Emmitsburg Community Center roofs with an estimated 25-year life:

	Incremental Cost of TPO roof	Projected Energy Savings/Yr.	Payback Period (Yrs.)
Health Department	\$10,000	\$1,250	8.0
Emmitsburg Community Center	\$12,000	\$1,980	6.1

Mount Saint Mary's University renewable energy projects: Commissioner Gardner asked staff to learn more about Mount Saint Mary's solar and geothermal renewable energy projects. On Friday August 27th, Doug Pearre and Jessica Stoner met with Phil Valentine from the Mount who provided staff information on the planned solar photovoltaic power farm and the operating geothermal dormitory.

The University established a partnership with Constellation Energy Group to create and house a 15.9 megawatt photovoltaic power farm system. The project is currently in the approval process and is expected to be operational during the spring of 2011. The 100-acre solar farm is to be located behind the Arc Gymnasium. Constellation Energy Group will lease the land from the University and the University will have the option to purchase a portion of the renewable energy that is generated. The project is in its early stages and the financial benefit to the University is still uncertain.

In 2008 the University opened Bicentennial Hall, a 120,000 square foot dormitory that utilizes a geothermal heating and cooling system. The geothermal system is comprised of 62 wells with 18,000 feet of piping. The dormitory houses 185 residents and the utility costs (electric and natural gas) are approximately \$2.00 per square foot.

Attachment C



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Mark Lancaster

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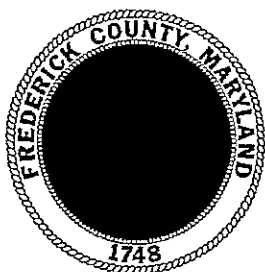
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Director



FREDERICK COUNTY SUSTAINABILITY COMMISSION

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www.sustainablefrederickcounty.org

TO: Frederick Board of County Commissioners

FROM: Don Briggs, Chairman 

RE: Recommendation, Draft Comprehensive Energy Plan

DATE: August 19, 2010

On July 21, 2010, during a regular meeting of the Frederick County Sustainability Commission, Austin Abraham and Jessica Stoner of the Management Services Division presented the Draft Comprehensive Energy Plan for our review and comment. The Board of County Commissioners heard a similar presentation from Management Services on June 22, 2010 and asked staff to present the plan to the Sustainability Commission prior to bringing a final version back to the Board for adoption.

The commission spent approximately one hour and a half hearing the presentation and discussing the components of the plan with staff. Our liaison from the Office of Environmental Sustainability, Hilari Varnadore, had supplied us with the plan well in advance of the meeting and members had taken the time to thoroughly review it prior to the meeting. Additionally, the plan was posted on the sustainability office web site for the community to review.

The Sustainability Commission supports the adoption of a Comprehensive Energy Plan for Frederick County Government and the strategic goal adopted by the Board of County Commissioners to reduce the county's use of non-renewable energy by 50% by 2024.

We recognize and applaud the county staff for their hard work in the development of the proposed Plan. The FCSC endorses the many aspects of the staff-recommended Comprehensive Energy Plan that are cost-effective and can reasonably be expected to both reduce the use of non-renewable energy and reduce the County's energy costs over time.

Our Vice Chairman, Fred Ugast, provided a recommendation in print for the commission to review after the presentation was completed. The commission made one amendment to his recommendation, then voted unanimously to forward the attached to the Board for its consideration. Our recommendation is attached.

We appreciate the opportunity to review the Energy Plan and look forward to staying engaged in this process.

Attachment C

Recommendation to the Board of County Commissioners regarding the Comprehensive Energy Plan
Frederick County Sustainability Commission
July 21, 2010

The Frederick County Sustainability Commission (FCSC) supports the adoption of a Comprehensive Energy Plan for Frederick County Government and the strategic goal adopted by the Board of County Commissioners to reduce the county's use of non-renewable energy by 50% by 2024.

We recognize and applaud the county staff for their hard work in the development of the proposed Plan. The FCSC endorses the many aspects of the staff-recommended Comprehensive Energy Plan that are cost-effective and can reasonably be expected to both reduce the use of non-renewable energy and reduce the County's energy costs over time.

We also recommend regular periodic reviews of emerging technologies and strategies that could be adopted by the county when such technologies can be considered cost-effective, including the use of potential grant or other non-county funding sources that may be available. We recommend that the Board of County Commissioners establish an update schedule for the Comprehensive Energy Plan at least once every two years to report both on actual versus projected results and on the availability of additional cost-effective technologies and strategies that could be incorporated into the Plan update.

We note that a significant portion of the staff-recommended Comprehensive Energy Plan depends upon the availability of unspecified and unknowable future technologies, on the purchase of Renewable Energy Credits and/or the purchase of renewable electricity from a planned waste-to-energy plant.

We do not support the inclusion of these elements within the Comprehensive Energy Plan and recommend that the plan be reviewed to reflect the elements that can be considered cost-effective based on environmental, social and economic returns at the time of the Plan's adoption even though doing so will result in substantially less than a 50% projected reduction in non-renewable energy sources as reflected in the strategic goal.

We believe that the County can and should continue to maintain the long-term goal and reiterate its intention to continually strive for larger reductions over the planning period as specific additional technologies and strategies emerge that can reasonably be reviewed as cost-effective and reduce our reliance on non-renewable fuels.

Motion: Rich Maranto made a motion to accept Fred Ugast's comments on the Energy Plan as amended (amendment underlined). Mark Lancaster seconded the motion and all voted in favor.